

REMARKS

Claims 1-15 were examined. Claims 1-12, 14 and 15 were rejected. Claim 13 was objected to. Claims 5, 6, 12 and 13 were amended. Claims 1-4, 7-11, 14 and 15 remain unchanged. Claims 1-15 remain pending in this application.

The Examiner has rejected claims 1-4, 8-11, 14 and 15 under 35 U.S.C. § 102(a) as being anticipated by International Patent Publication WO 99/46861 (Mohan). Applicant respectfully traverses this rejection.

Independent claim 1 recites in pertinent part, "A digital data modulator, comprising: ... a pulse signal generator, generating respective pulses representing edges of the encoded digital data signal; and a carrier signal generator, for generating a carrier signal having carrier pulses corresponding to the respective pulses." Independent claim 8 recites, "A digital data demodulator, comprising: a source of a modulated signal, having carrier pulses spaced relative to each other to represent a variable pulse width encoded digital data signal; a detector for generating a variable pulse width encoded signal in response to received carrier pulses; a decoder for decoding the variable pulse width encoded signal to generate the digital data signal." Independent claims 14 and 15 contain respectively similar recitations.

Applicant respectfully points out that for a reference to anticipate a claim, that reference by itself must disclose each and every limitation recited in that claim. Mohan does not disclose a pulse signal generator, generating respective pulses representing edges of an encoded digital data signal; nor a carrier signal generator, for generating a carrier signal having carrier pulses corresponding to the respective pulses, as is recited in claims 1 and 14. Nor does Mohan disclose a source of a modulated signal having carrier pulses spaced relative to each other to represent a variable pulse width encoded digital data signal; nor a detector for generating a variable pulse width encoded signal in response to received carrier pulses, as is recited in claims 8 and 15.

Mohan does disclose an encoder (page 11, lines 20-21, Fig. 2; and page 14, lines 13-15, Fig. 7: 200) for encoding digital data (Fig. 6: NRZ DATA) using a variable pulse width code (Fig. 6: ENCODED DATA). However, in Mohan this encoded data is applied to a balanced modulator (Fig. 7: 710). One skilled in the art will understand that a balanced modulator is an amplitude modulator in which the carrier signal is suppressed in the output signal, leaving only the sidebands.

That is, a balanced modulator produces a double-sideband, suppressed carrier modulated signal. A balanced modulator is not, and does not contain, a pulse signal generator generating respective pulses representing edges of the encoded digital data signal, as recited in claims 1 and 14. Mohan states, "The modulated signal from unit 710 is low pass filtered by filter 720 to extract the encoded VAC information and component $f_c + f_b$." (page 14, lines 16-18, emphasis added). This quotation confirms that the balanced modulator 710 generates a modulated signal and also indicates that no pulse signals are generated by the balanced modulator 710. Because there is no pulse signal generator generating pulse signals representing edges of the encoded digital data signal, there can be no carrier signal generator generating a carrier signal having carrier pulses corresponding to the respective pulses, as recited in claims 1 and 8.

Mohan also discloses a decoder (page 13, line 10, Fig. 4; and page 16, lines 21-23, Fig. 8: 836) for decoding the variable pulse width code (Fig. 6: ENCODED DATA) to produce digital data (Fig. 6: NRZ DATA). However, in Mohan the received modulated signal is a spread spectrum signal (page 14, lines 11-13). That is, the output signal from the final mixer (Fig. 7: 722) in the transmitter, and therefore the input signal to the receiver (Fig. 8) is constituted by RF component f_{RF} and the pseudorandom noise component PN in accordance with spread spectrum practice, and the VAC encoded information (page 14, lines 24-27). The spread spectrum modulated signal disclosed in Mohan does not have carrier pulses spaced relative to each other to represent a variable pulse width encoded digital signal, as is recited in claims 8 and 15. Because the modulated signal disclosed in Mohan does not have carrier pulses spaced relative to each other to represent a variable pulse width encoded signal data signal, Mohan cannot generate a variable pulse width encoded signal in response to the (non existent) received carrier pulses, also as recited in claims 8 and 15.

The Examiner attempts to relate the recited "pulse signal generator" to the balanced modulator 710 of Mohan. However, as described above, this is not an accurate characterization of a balanced modulator. The Examiner further states that "it is inherent that the balanced modulator (710) is employed as a differential amplifier, that is the balanced modulator is a differentiator." Applicant makes two observation on this characterization. First, none of 'a balanced modulator', 'a differential amplifier' nor 'a differentiator' are recited in Claim 1. Second, the three electronic elements in question: a balanced modulator; a differential amplifier; and a differentiator are all

completely different electronic elements performing completely different functions, and none of them is a pulse signal generator.

As described in detail above, Mohan does not disclose each and every limitation recited in independent claims 1, 8, 14 and 15. These claims are, therefore, deemed allowable. The Examiner is respectfully requested to reconsider and withdraw this rejection and to allow these claims. Claims 2-4, dependent from and further defining the invention recited in claim 1, and claims 9-11, dependent from and further defining the invention recited in claim 8 are deemed allowable for the same reasons given above with respect to claims 1 and 8, respectively. The Examiner is respectfully requested to reconsider and withdraw this rejection and to allow these claims as well. However, the Applicant makes the following comments on the indicated claims.

Claim 3 recites in pertinent part, "... the pulse signal generator generates positive pulses in response to a first edge in the digital data signal and negative pulses in response to a different second edge in the digital data signal; and the carrier signal generator generates a carrier pulse having a first phase in response to a positive pulse and having a second phase in response to a negative pulse." Nowhere in Mohan is there any disclosure of generating positive pulses in response to a first edge of the digital signal nor negative pulses in response to a different second edge of the digital signal, as recited in claim 3. Further, nowhere in Mohan is there any disclosure of the carrier signal generating a carrier pulse having a first phase in response to a positive pulse and a second phase in response to a negative pulse.

Claim 4 recites in pertinent part, "... said first edge is a leading edge; and said second edge is a trailing edge." Because Mohan does not disclose generating positive and negative pulses in response to respective first and second edges in the digital signal, Mohan cannot disclose the first edge being a leading edge and the second edge being a trailing edge, as recited in claim 4.

Claim 10 recites in pertinent part, "... the carrier pulses have one of a first phase and a second phase. Because the received modulated signal is a spread spectrum modulated signal, and does not include carrier pulses, Mohan cannot disclose the (non existent) carrier pulses having one of a first and a second phase as recited in claim 10.

Claim 11 recites in pertinent part, "... the first phase is substantially 180 degrees out of phase with the second phase." Because Mohan does not disclose a received signal including

carrier pulses, Mohan cannot disclose the (non existent) carrier pulses having one of a first and a second phase, and also cannot disclose the first phase being substantially 180 degrees out of phase with the second phase, as recited in claim 11.

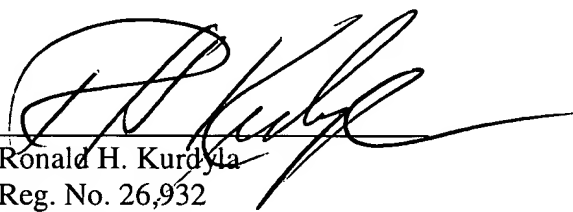
The Examiner has provisionally rejected claims 1, 2, 5-12, 14 and 15 under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-3, 10-13 and 15-18 of U.S. Patent 6,359,525. In order to respond to this rejection, Applicant has included with the Amendment a Terminal Disclaimer. This should overcome this rejection. By virtue of this Terminal Disclaimer, claims 5, 6, 7 and 12 are deemed allowable but dependent from a rejected base claim. Claims 5, 6 and 12 (claim 7 is dependent from claim 6) have been rewritten in independent form including all of the limitations of the base claim and any intervening claim. These claims, therefore, should be allowable and the Examiner is respectfully requested to allow them.

The Examiner has objected to claim 13 as depending from a rejected base claim but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. Applicant has rewritten claim 13 as suggested by the Examiner. Claim 13, therefore, should be allowable. The Examiner is respectfully requested to reconsider and withdraw the objection to claim 13 and to allow claim 13.

In view of the above amendments and arguments, claims 1-15 are deemed allowable. The Examiner is respectfully requested to reconsider and withdraw the rejections, and to allow the amended application.

Respectfully submitted,

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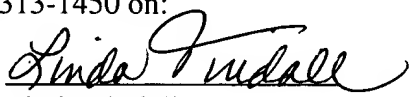
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August 14, 2003
Date


Linda Tindall